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OSTEOLOGICAL CATALOG: USER'S GUIDE AND DOCUMENTATION

A MICROCOMPUTER-BASED SYSTEM FOR MANAGING OSTEOLOGICAL SPECIMENS

By

James W. Gilpatrick, Jr. and G. Jay Walker

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Introduction

The Osteological Catalog is a microcomputer based software system designed for use in managing the cetacean osteological specimens worked with at the NMFS, Southwest Fisheries Center. In terms of numbers, the database is dominated by records of dolphin osteological specimens. Most of these specimens were taken incidentally in the eastern tropical Pacific yellowfin tuna fishery. Cetacean specimens taken from other sources i.e., beach strandings, aquaria, and incidentally from other fisheries, are represented to a lesser extent.

Most specimens were, at one time, held at the Southwest Fisheries Center. The majority have now been prepared, cataloged and curated at various natural history museums located in North America, Europe and Asia. The catalog accounts for these specimens, and their locations; it can also describe their condition and status (studied or not). By offering an edit system (to update the database), a report system (for presentation of specific data) and a transfer system (to send data between computers), the catalog is designed as an aid to research in marine mammalogy, particularly cetacean taxonomy.

The software is written in dBASEII, version 2.41. Processing is on an 8-bit La Jolla Standard (henceforth referred to as "LJS") micro computer equipped with a 13 megabyte hard disk. The operating system is CP/M, version 2.2.

I. OVERVIEW

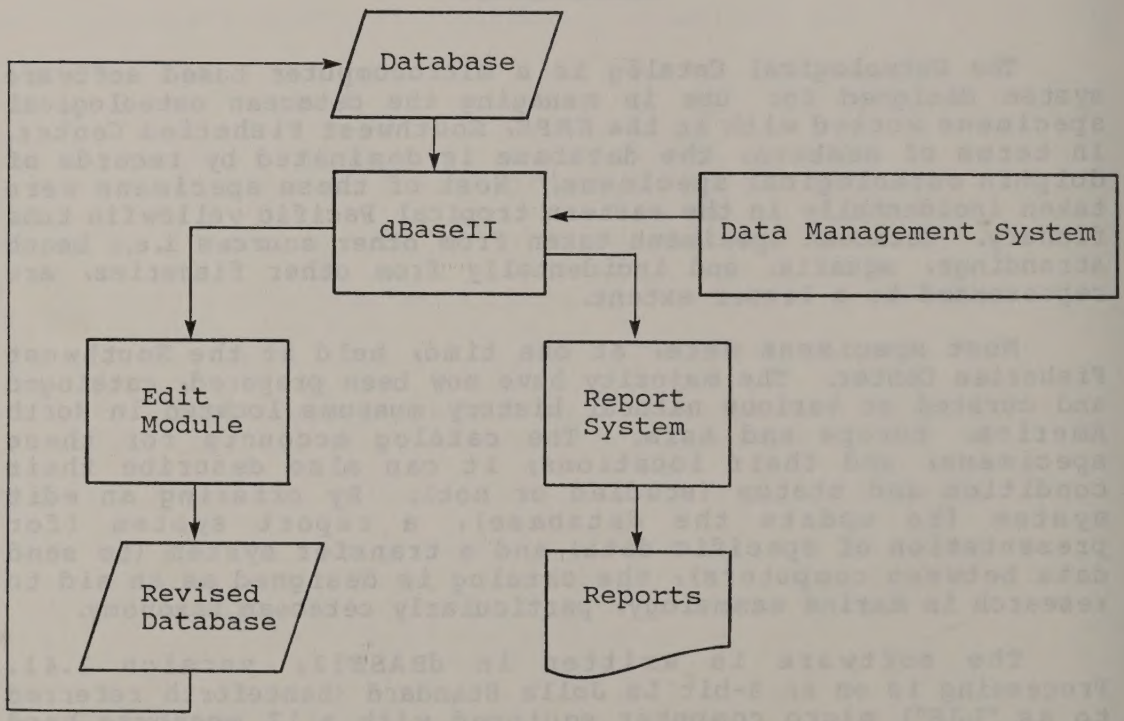
1. Description of the Catalog:

The Osteological Catalog database (named OSTEO.DBF) contains information on osteological research specimens. Associated with the database is a data management system which performs two main functions:

1) An edit module designed to add, change or delete records from the database.
2) A report system designed to produce reports using the data in the OSTEO.DBF.

The database and data management system are stored on a 5-inch hard disk; backup copies are on 8-inch floppy disks. The edit module and report system can be run on a microcomputer using dBASEII.

OVERVIEW - OSTEOLOGICAL CATALOG



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2. Data Record Fields

Each data record on the database (OSTEO.DBF) has 25 fields (listed below). The first two fields are specimen number or SPECIMEN with a length of 7 characters and part name or PART, also with a length of 7 characters. Each data record has a 'key' consisting of the specimen number and part name. This key is used during the dBASEII index function, this speeds up the processing time required to search for a given record. The key for a record must be unique - no other record on the database can have the same key. It is possible for the same specimen number to have different osteological parts and still have unique keys. For example, one record might have a specimen number of XYZ1234 and a part name of FETUS, while another record might have the same specimen number of XYZ1234 and a part name of CARCASS.

	Field	Length	Literal Meaning
1.	SPECIMEN	7	Specimen number
2.	PART	7	Part name
3.	ENTRYDATE	8	Data entry date
4.	ENTRANT	3	Entrant's initials
5.	STATUS	5	Status
6.	LOCATION	4	Storage location
7.	SUBLOCAT	3	Storage sub-location
8.	DISP	1	Disposition of specimen
9.	MUSEUM	7	Museum name
10.	MUSEUMNUM	10	Museum number
11.	FETSEX	1	Fetus sex
12.	FETLEN	3	Fetus length
13.	MISC	4	Miscellaneous codes
14.	CRUISE	4	Cruise
15.	SPECIES	5	Species code
16.	STOCK	3	Stock code
17.	SEX	1	Sex
18.	COLLDATE	8	Collection date
19.	LATITUDE	4	Latitude
20.	NS	1	North/south code
21.	LONGITUDE	5	Longitude
22.	EW	1	East/west code
23	LENGTH	3	Body length
24.	FLAG	1	Flag
25.	COMMENT	25	Comment

Total Fields = 25 Total Length = 124

3. Organization Of The Database(s)

The individual data records make up the Osteological Catalog database (OSTEO.DBF). The number of data records that can be entered into the database is limited only by the storage capacity of the disk or diskette that hold the database.

Be aware that there are actually three databases used by the data management system: OSTEO.DBF, PROSTEO.DBF and KEYVAL.NDX. PROSTEO.DBF contains data records that were once on OSTEO.DBF. These records were either deleted from OSTEO.DBF or replaced by records with more current information. It may be thought of as a historical database containing the prior data records of OSTEO.DBF. KEYVAL.NDX is a dBASEII index file used to speed up processing during the edit (OSTEOEDT.CMD) modules. Indexing sorts the database by using the unique specimen number and part name combination key of each record. This results in faster searches for a particular record.

As you use the edit module, PROSTEO.DBF and KEYVAL.NDX are used. This is not apparent to the program user and there is no need to draw attention to these databases (except to back them up at the end of the edit session). However, you should be aware that all three of the databases (OSTEO.DBF, PROSTEO.DBF and KEYVAL.NDX) are essential to the data management system. They

should not be modified outside of the edit module and they should NEVER be deleted from your disk or diskette.

II. The Edit Module

The edit module allows you to add, change or delete a data record on the database.

Whenever the edit (OSTEOEDT.CMD) module is used, the three databases (OSTEO.DBF, PROSTEO.DBF AND KEYVAL.NDX) are modified. It is very important to make backup copies of these three databases after you run the edit module. The procedure for making backup copies is discussed in Section IV. It would be good at this point for the user to review the elementary features of the CP/M operating system and the basic use of the microcomputer (things like listing all your files or making a copy of a file). There are a number of manuals at SWFC discussing CP/M.

1. Program Files

All the data files and dBASEII command files that you need to run the edit module should already be on your disk. Here are the command files that you need:

OSTEOEDT.CMD	ADDSPEC.CMD	CHNGSPEC.CMD
OSTEOEDT.VL1	ADDSPEC.DEF	CHANGSPEC.DEF
OSTEOEDT.VL2	ADDSPEC.DUP	CHANGSPEC.IO
OSTEOEDT.RPL	ADDSPEC.IO	DELSPEC.CMD
OSTEOEDT.RLS	ADDSPEC.RPL	KEYVAL.NDX
	ADDSPEC.RLS	OSTEO.DBF
		PROSTEO.DBF

You should also have the dBASEII system files stored on your disk.

2. Starting The Edit

To run the Edit Module you first must enter dBASEII. This (original)system is on the "B" side of a 5-inch hard disk LJS micro-computer, therefore all commands shown will be from the "B" side. To enter dBASEII type in at the prompt:

B>DBASE <cr>

You are then prompted for today's date. After entering it you are ready to start the Edit Module.

Using the Edit Module is straightforward. Changes are made to the various databases automatically. To start the edit give the command:

DO OSTEOEDT <cr>

The following is displayed on the screen:

"Enter type of change you wish to make to the Osteological Catalog file:

A to ADD records
C to CHANGE records
D to DELETE records

Type E to END program"

This display is referred to as the Main Edit Menu. You type in **A**, **C**, or **D**, depending on the type of editing you want to do, E will get you out of the Osteological Catalog Edit Module.

3. Adding Records

If you respond with an **A** to the Main Edit Menu, you are indicating your desire to add records to the database. The screen will erase the Main Edit Menu, and then ask you to enter the specimen number for the record you wish to add to the database. Once a valid specimen number is entered, the screen displays 'Add Record (Page 1)', and spaces appear for entering values for the first 18 fields of the new record (up through the 'collection date'). Consult the four Reference lists in this manual for valid field data entries.

After you type in values for these first 18 fields the screen erases and displays 'Add Record (Page 2)' with spaces for entry of the last seven variables (from 'latitude' to 'comment'). You continue by typing in values for the last seven fields. After all values are entered, the program adds the new record to the database. This takes some time. The program also makes sure the specimen number and part name for the new record are unique. If they are not, the record is removed from OSTEO.DBF and placed in PROSTEO.DBF before the new record is added. The program then asks you to enter the specimen number of the next record to be added to the database. You can continue adding as many records as you like. When you are finished, enter a carriage return instead of a specimen number; this takes you back to the Main Edit Menu.

Points to remember when adding records:

- Type in the specimen number to start.
- Enter a carriage return at the specimen number prompt to return to Main Edit Menu.
- If the value you are entering fills up the field the cursor jumps to the next field.
- If a field does not fill up, you must hit a carriage return to go to the next field. For example, if you enter a part name of **FETUS**, this only fills up five characters of the seven character field of part name. You must hit a carriage return to get to the next field.

- If you try to enter data and nothing appears on the screen, the values you are entering are invalid. For example, if you enter '34' for part name, nothing will appear because the program is looking for literals, not a number.
- After the variables for each page are entered, the program takes a few moments to check if the various values are valid. If there are invalid entries, it prints a short message at the bottom of the screen and prompts you to re-enter the value. For instance, if you put **14/02/84** as your entry date, it would say "Invalid date entered for today. Re-enter date." The program does not go on to the next set of fields until most variables on the screen currently displayed have valid values. Reference lists 1 thru 4 contain details on the valid values for each variable.
- Numeric values should be right-justified (except for MUSEUMNUM, for which left-justified is ok) and all spaces for numerics should be filled (except MUSEUMNUM, which may contain literals too). For example, cruise number has four characters. If you are adding a record with a cruise number of **163**, it should be entered as **0163**. Longitude consists of five characters. A longitude record of 80 degrees, 37 minutes is entered as **08037**.

4. Changing Records.

If you respond with a "C" to the Main Edit Menu, you have indicated your desire to change records on the database. The Main Edit Menu erases and then you are asked to enter the specimen number and part name of the record you wish to change. When a record is found that matches the specimen and part you have indicated, the screen displays 'Change Record (Page 1)' and shows the current values for the fields of that record. To keep the same value for a particular field, simply hit a carriage return and the cursor will skip over that field and go to the next. To enter a new value for a particular variable, type over the old value. To make a field blank, type a series of blank spaces over the current field value.

If no record can be found on the database that matches the specimen number and part name you entered, the program states this and prompts you for another specimen and part name.

The first page (or screen) contains the first 18 fields (up to "collection date"). After these records are all validated, the screen erases and says "Change Record (Page 2)." The screen then displays the current data entered for the seven fields from "latitude" through "comment." The data displayed on the screen can be left as is or changed by typing in new values over the old values. After these values are validated, the new (changed) record is added to the database and the original record is automatically transfered to PROSTEO.DBF. After a short time, you are asked to enter the specimen number and part name of the next record to be changed. Continue changing as many records as you

like. When you are finished, enter a carriage return instead of a specimen number, and you will return to the Main Edit Menu.

Points to remember when changing data records:

- Begin by typing in the specimen number and part name of the record you want to change.
- The current values for the record are displayed on the screen. Type the new field entries over the fields you want changed. To leave a field unchanged, enter a carriage return and the cursor will skip to the next field.
- To return to the Main Edit Menu, enter a carriage return at the beginning of the specimen number field.

Important Note - Because of a bug in dBASEII, if you enter a specimen number and part name which is not on the database, your screen might say 'Record Out of Range' and exit the program. If this happens, first make sure you have the correct specimen number and part name. Then re-enter the program by typing **DO OSTEOEDT.**

If this problem persists and you keep getting the 'Record out of Range' message for a valid specimen number and part name, exit dBASEII by typing in **'QUIT'** and re-enter dBASEII by typing **DBASE,** then **'DO OSTEOEDT,'** etc.

5. Deleting Records.

If you respond with a D to the Main Edit Menu prompt, you have indicated your desire to delete records from the database. The Main Edit menu erases and you are prompted to enter the specimen number and part name of the record you wish to delete. If you wish to return to the Main Edit Menu, enter a carriage return at the specimen number field. If no record can be found for the specimen number and part name you entered, the program states this fact and prompts you for another specimen number and part name.

Assuming a record is found for the specimen and part indicated, the screen asks:

'Delete for Specimen = _____ and part = _____ (Y/N)?'(with the indicated specimen and part written in) this serves as a double check to make sure you are deleting the correct record. Typing a Y (for yes) causes automatic deletion of the indicated record from OSTEO.DBF (it is added to PROSTEO.DBF). You are then prompted for the specimen number and part name of the next record to be deleted. You can delete as many records as you like. When you are finished, enter a carriage return instead of a specimen number and you will return to the Main Edit Menu.

Points to remember when deleting records:

- Type in the specimen number and the part name of the record you want deleted.
- When finished with all deletions, enter a carriage return at the specimen number field, this will return you to the Main Edit Menu.

III. The Report Module

These report programs use the Osteological Catalog database and generate output (in a report format) on the screen or the printer. Some of the reports are interactive and allow the user to directly specify certain information in the report output. All reports, except the Multiple Selection Report, are accessed through a shared menu.

Interactive Reports - these interactive programs provide three different presentations of data and "parts" collected from a specimen. You can view the reports on the CRT screen or have them printed out on your printer.

Overall Summary Reports - list summary information for all records on the database. The output appears on the printer.

Multiple Selection Report - An interactive report providing selection and sorting of records that contain the data you specify. Output is sent to the printer.

1. Program Files

Make sure the following files exist on your disk before you start:

OSTEORPT.CMD	**SPEC.VAL**	**PREPARE.CMD**
SPEC.CMD	**PART.VAL**	**LOANPART.CMD**
PARTLIST.CMD	**STCKBASE.CMD**	**CNTRPART.CMD**
PART.CMD	**INVSUM.CMD**	**DONPART.CMD**
MULTSLCT.CMD	**SRT.VAL**	**OSTEO.DBF**
LOOKAT.VAL	**SELFIELD.VAL**	**STKTABLE.DBF**
		KEYVAL.NDX

(The files needed to run dBASEII should also exist on your disk.)

2. STARTING THE REPORT MODULE

To start the report module, get into dBASEII and say:

DO OSTEORPT<cr>

The following will appear on your screen:

"ENTER THE LETTER OF THE REPORT YOU WANT PRODUCED:

INTERACTIVE REPORTS:
(A) SPECIMEN SUMMARY (Information on one specimen only)
(B) PART SUMMARY (Information on one specimen-part)
(C) PART LISTING (All parts for one specimen)

"PARTS OUT" REPORTS
(F) List of PARTS LOANED
(G) List of PARTS CONTRACTED
(H) List of PARTS DONATED

OVERALL SUMMARY REPORTS
(J) SUMMARY of all specimens by SPECIMEN NUMBER
(K) SUMMARY of all specimens by SPECIES/STOCK group
(L) SUMMARY of PREPARED PARTS
Type **E** to END program"

This will be referred to as the Main Menu for the Report Module.

Press the appropriate key for the report you want to produce or an **E** to end the program and get back to dBASEII. If you indicate one of the interactive reports, the program asks if you want the report produced on the printer instead of the screen. If you do, type in a **Y** to indicate yes.

The following three sections describe the three main groupings of reports in more detail.

3. INTERACTIVE REPORTS

There are three reports in this group:

(A) Specimen Summary
(B) Parts Summary
(C) Parts List

(A) The Specimen Summary shows information for one selected specimen number. Information on parts associated with that specimen are not listed. If you indicate you want to produce this report the screen says:

"ENTER SPECIMEN NUMBER

When finished enter a carriage RETURN"

If the specimen number you indicate is not in the database, the program says "Specimen not on database for Specimen _____" and prompts you to enter another value. If the specimen number is on the database, information on that specimen is displayed in the following format:

SPECIMEN REPORT
(EXAMPLE)

SPECIMEN	CRUZ	SPECIES	STOCK CODE	SEX	COLLECTION DATE	LAT N/S	LONG E/W	LENGTH
BDJ0007	0441	S.COE	13S	M	12/13/78	0901 2	09202 2	194

B) The Parts Summary shows information on one selected part. A "part" is any item collected (see Reference list 1) for study. This includes bones as well as photos and measurements. if you indicate you want to produce this report, the screen says:

ENTER SPECIMEN NUMBER

When finished enter a carriage RETURN

After a valid specimen number is entered, the screen says:

ENTER PART NAME

Enter blanks to go to next prompt

If blanks are entered, or if the program cannot find the specimen number and part name which you entered, you will be prompted to enter another specimen number. Otherwise, when the program finds the record with the specimen number and part name you indicated, it displays information for it in the following format:

PART REPORT
(EXAMPLE)

SPECIMEN	PART	STATUS	LOCAT	SUB-LOC	DISP	MUSEUM NAME	MUSEUM NUMBER
DJT0045	HEAD/SK	PREPD	MUSM		D	SDMNH	23554

ENTRY DATE	ENTRANT	MISC	FLAG	COMMENT
06/11/85	JWG			ROSTRUM BROKEN

C) The Parts List shows information on all parts for a specific specimen. If you indicate you want to produce this report, the screen says:

ENTER SPECIMEN NUMBER

When finished enter a carriage RETURN

If the specimen number you enter is not on the database, the

program says 'Specimen not on database for Specimen _____', and prompts you to enter another value. If the specimen number is on the database, every research part for that specimen is shown in the following format:

PARTS LIST REPORT
(EXAMPLE)

SPECIMEN	SPECIES	STOCK CODE	SEX	LENGTH	LATITUDE	N/S	LONGITUDE	E/W
DJT0045	S. ATT	06	M	172	2026	1	10632	2

PART	STATUS	LOCAT	ENTRY DATE	ENTRANT	MUSEUM	MUSEUMNUM
EXTMS	TOTAL	SWFC	06/11/85	JWG		
FLIPPERS	PREPD	MUSM	06/11/85	JWG	SDMNH	22554
HEAD/SK	PREPD	MUSM	06/11/85	JWG	SDMNH	23554
STOMACH	FRCZN	UNK	01/05/84	JWG		
TERM/RT	PREPD	MUSM	06/11/85	JWG	SDMNH	23554

NOTE - If you are running one of the interactive reports and the specimen or part that the report shows on the screen is not the one you asked for, there are problems with the index file. You should perform the following routine to re-index the datafile:

a. Return to the **Main Menu** and type in **E** to end the Report Module.
b. Re-index the database with the command:

   • INDEX ON SPECIMEN+PART TO KEYVAL <cr>

   This will take five to ten minutes.

c. Re-enter the Report Module with the command: **DO OSTEORPT** <cr>

4. PARTS OUT REPORTS

There are three reports in this group:

(F) List of Parts Loaned
(G) List of Parts Contracted
(H) List of Parts Donated

These three reports list specimens that are on loan, being prepared on contract, or have been donated to a museum or other institution. Once the Main Menu is listed on your screen and you indicate you want to produce one of these reports, it is produced on your printer automatically. All three reports have similar

formats. Below is an example of a Parts Out-report:

PARTS OUT ON CONTRACT
(EXAMPLE)

SPECIMEN	SPECIES CODE	STOCK CODE	PART	STATUS	MUSEUM NAME	MUSEUM NUMBER	COMMENT
CCC1111	S.LON	11	HEAD/SK	IPREP	LACM		HYOID MISSING
CCC3472	S.ATT	02S	CARCASS	IPREP	LACM		TO: SDMNH

5. OVERALL SUMMARY REPORTS

There are three reports in this group:

(J) Summary of all specimens by SPECIMEN NUMBER
(K) Summary of all specimens by SPECIES/STOCK group
(L) Summary of PREPARED PARTS.

Once the Main Menu of the Report Module is displayed on the screen and you indicate you want to produce one of these reports, it is produced automatically on your printer.

(J) The Summary of all specimens by SPECIMEN NUMBER is a report using every record in the database. All records are listed in order by specimen number in the following format:

INVENTORY SUMMARY
(EXAMPLE)

SPECIMEN	SPEC CODE	STOCK CODE	CRUISE	COLLECT. DATE	SEX	LEN	N LATDS	N LONGD	E W	PART	STATUS	LOCAT
ARK0016	S.ATT	02N	0721	07/17/81	F	187	0920	1 12911	2	FETUS	FROZN	OTHR
AS00012	S.LON	11N	0423	08/26/78	F	180	1057	1 13007	2	HEAD/SK	PREPD	MUSM
AXB0004	S.ATT	02N	0555	08/28/78	F	192	1950	1 10541	2	FETUS	FROZN	OTHR

(K) The summary of all specimens by Species/Stock group also lists every specimen in the database. The specimen records are sorted into their respective species and stock groups. These groups are printed out in report format, i.e., Eastern spinner dolphins in one group, Northern offshore spotted dolphins in another group, etc. This report takes some time to produce due to the multiple sorting routines. Below is an example:

SPECIMEN INVENTORY - GEOGRAPHIC STOCKS
(EXAMPLE)

STENELLA ATTENUATA
NORTHERN OFFSHORE SPOTTED DOLPHIN

SPECIMEN	CRUISE	COLL DATE	SEX	LEN	PART	STATUS	LOC.	COMMENT
ARJ0016	0721	07/17/81	F	187	FETUS	FROZN	OTHR	E.V. PERRIN-WAYNE STATE UNIV.
AXB0004	0555	08/28/79	F	192	FETUS	FROZN	OTHR	DIZON
AXB0008	0555	08/28/79	F	193	FETUS	FROZN	OTHR	DIZON

(L) The list of PREPARED PARTS prints out the records for each species/stock group but only for prepared osteological parts. Below is an example of a report:

LIST OF PREPARED PARTS
(EXAMPLE)

STENELLA LONGIROSTRIS
SOUTHERN WHITEBELLY SPINNER DOLPHIN

SPECIMEN	SPEC CODE	STOCK CODE	SEX	LEN	PART	LOC.	DISP	MUSEUM NAME	MUSEUM NUMBER
AXP0094	S.LON	11S	M	162	HEAD/SK	MUSM	D	LACM	54981
AXP0101	S.LON	11S	F	156	HEAD/SK	MUSM	D	LACM	54982
AXP0104	S.LON	11S	M	167	HEAD/SK	MUSM	D	LACM	54983

Note: To safely exit or stop a report program in progress enter the "escape" character

6. Multiple Selection Report

INTRODUCTION

The multiple selection program, **MULTSLCT**, is a multi-purpose program to produce reports using the osteological catalog database - **OSTEO.DBF**. This program is not directly connected with the 9 menu driven reports previously described. It is a seperate interactive program.

MULTSLCT is distinguished by two features: a) it can select records containing specific data that meet your report selection criteria and b) it has the capacity to arrange the selected records into a sorted (indexed) report.

To use the program, get into **dBASE II** and give the command **DO MULTSLCT.** The input file **OSTEO.DBF** is automatically brought on line and the output will go directly to the printer. Be sure the printer is turned on.

RECORD SELECTION

The record selection part of **MULTSLCT** is essentially a two step process. The two sequential steps can be repeated again and again until you've narrowed the selection down to those records containing the values you require. The two steps are:

a) You will first be asked to select a variable (actually a data record "field"). All the field variables are listed on the screen. Hit carriage return after entering the variable.

b) The next step is to choose a value for that field. All the values for that field will be listed on screen. The program will check all records and select those with a field variable equal to the value you choose, these records will be held in a sub-file.

For example: Say you want to generate a **MULTSLCT** report that prints out all the cetacean flippers that are prepared in museums. Your first entry (Step a, above) for a field variable will be **PART**, and your second (value) entry (Step b, above) will be **FLIPPRS.** The screen will look like this after you've made these selections:

"ENTER FIRST SELECTION VARIABLE (Field) IF NO SELECTION IS DESIRED, ENTER A CARRIAGE RETURN

SPECIMEN	**DISP**	**SPECIES**	**EW**
PART	**MUSEUM**	**STOCK**	**LENGTH**
ENTRY DATE	**MUSEUMNUM**	**SEX**	**FLAG**
ENTRANT	**FETSEX**	**COLLDATE**	**COMMENT**
STATUS	**FETLEN**	**LATITUDE**	
LOCATION	**MISC**	**NS**	
SUBLOCAT	**CRUISE**	**LONGITUDE**	

:PART:

ENTER THE VALUE TO BE SELECTED FOR THAT VARIABLE, THE FOLLOWING ENTRIES ARE VALID:

CARCASS	**HEAD/SK**	**PC SKEL**	**FETUS**
STOMACH	**FLIPPRS**	**ODD BON**	**BALEEN**
TERMVRT	**PARASIT**	**OTHER**	

: FLIPPRS :"
(HIT<CR>)

The program will find those records with a **PART** field equal to **FLIPPRS**, then it will set them aside in a sub-file.

Next, the program will ask you to:

"ENTER NEXT SELECTION VARIABLE, TO FINISH THIS SELECTION, HIT RETURN"

This means you can have the option to go through steps A & B again. This time the program will make selections from the sub-file (contains all those records with a **PART** variable equal to **FLIPPRS**). Since you want a report on flipper specimens that are "prepared" and currently placed in museums, then you will select for your next variable the record field **STATUS**. Your next value selection for the status field will be **PREPD**. The program will select from the "flipper" sub-file those specimens that are prepared and place them into another sub-file.

Again, you will be asked if you want to make another field selection (Step a) and field value selection (Step b). If you were interested in flippers that were prepared and placed at any location, then you would hit <CR> and the program assumes you have made your final selection. Since you are interested in flippers that are prepared and placed in museums then steps a & b will be necessary for the final selection of those specific records. You will select the field **LOCATION**, and then select the value **MUSM** for that field.

Since this isolates the records you are interested in there is no need to "select" any further, enter a <cr> for the next field variable prompt and another <cr> at the field value prompt.

INDEX PROCESS

The program now takes those selected records, holds them and asks if you want them indexed (sorted) in alphabetical (or numeric) order.

The screen will look like this:

"The report file may be indexed (sorted) on as many as five variables before printing out. Enter the first (primary) indexing (sort) variable. If indexing is not desired, enter a carriage return. Select from the following choices:

SPECIMEN	**DISP**	**SPECIES**	**EW**
PART	**MUSEUM**	**STOCK**	**LENGTH**
ENTRYDATE	**MUSEUMNUM**	**SEX**	**FLAG**
ENTRANT	**FETSEX**	**COLLDATE**	**COMMENT**
STATUS	**FETSEX**	**LATITUDE**	
LOCATION	**MISC**	**NS**	
SUBLOCAT	**CRUISE**	**LONGITUDE"**	

Up to five variables (actually record fields) may be selected for indexing. The first variable you specify for indexing will become the primary variable (you might also think of this as the primary sort key). The next variable specified

for indexing becomes the secondary variable. The report will be sorted by this variable within the primary variable. For example, if SEX is the primary indexing variable and LENGTH the second variable, all females that meet the record selection criteria will be listed on the report followed by the males (F falls before M). Within the female group the records will be sorted by length; likewise the male group will also be sorted by length.

The record selection and index sections can be independent of each other. You can produce a report using the record selection feature and omit indexing or you can produce an index report on the whole database without doing any record selection (just enter a carriage return at Steps A & B to bypass the multiple selection process).

The top of the ouput page will list a title and the variables and values used for selection and indexing. Below is an example of the report that would be generated by the choices made in the example session above:

"OSTEOLOGICAL CATALOG MULTIPLE-SELECTION PROGRAM
(EXAMPLE)

SELECTIONS: PART FLIPPRS
STATUS PREPD
LOCATION MUSM

INDEXED ON: SEX
LENGTH

SPECIMEN	SPECIES	STOCK	CRUISE	COLL-DATE	SEX	LEN	PART	STATUS	LOC.	MUSEUM	MUSEUM NUM
DJT0047	S.ATT	06	0494	04/13/79	F	103	FLIPPRS	PREPD	MUSM	SDMNH	23645
JBN0005	S.ATT	02S	0346	01/24/78	F	172	FLIPPRS	PREPD	MUSM	SDMNH	23751
SWJ0099	S.COE	13N	0289	07/27/77	F	175	FLIPPRS	PREPD	MUSM	SDMNH	
DJT0041	S.ATT	06	0494	04/13/79	F	216	FLIPPRS	PREPD	MUSM	SDMNH	23553
DJT0038	S.ATT	06	0494	04/13/79	F	234	FLIPPRS	PREPD	MUSM	SDMNH	23552
DJT0045	S.ATT	06	0494	04/13/79	M	172	FLIPPRS	PREPD	MUSM	SDMNH	23554
GCF0001	S.ATT	02S	0348	01/19/78	M	173	FLIPPRS	PREPD	MUSM	SDMNH	23555
TCF0092	S.COE	13S	0313	09/26/77	M	183	FLIPPRS	PREPD	MUSM	SDMNH	23544
GCF0012	S.ATT	02S	0348	01/19/78	M	198	FLIPPRS	PREPD	MUSM	SDMNH	23561
GCF0008	S.ATT	02S	0348	01/19/78	M	201	FLIPPRS	PREPD	MUSM	SDMNH	23559"

Isolating a "range" of variables

This program (MULTSLCT.CMD) does not select a "range" of variables (and their respective records). This type of selecting is useful in a situation where you might want information on specimens collected from a wide area of the ocean. There are some dBASEII commands that allow you to isolate the records

of specimens from a given area by "flagging" them with a determined variable in the "FLAG" field of OSTEO.DBF.

For example, say you are interested in studying all spinner dolphin (Stenella longirostris) specimen records collected from north of the equator and west of 110°00' West longitude. You could flag these records (in the FLAG field) with a "1" representing area 1. Then you could use the MULTSLCT.CMD program to select these "flagged" records and generate a report. Before you do this procedure, be sure OSTEO.DBF and the other databases are backed up with a current copy. If you have any doubts about the logic used in the following command, consult with a programmer before proceeding. You might want to set up a test subfile on the A side and make sure the command will do exactly what you expect. To flag the S. longirostris records, you would get into dBASEII and enter:

- USE OSTEO <cr>
- REPLACE ALL FLAG WITH '1' FOR ((SPECIES = 'S.LON').AND.(LATITUDE>='0000').AND.(LONGITUDE >='11000')) <cr>

this will place a "1" in the FLAG field of all S. longirostris records with a position north of the equator and west of the 110°W longitude. You can give any number of logical operation commands to "flag" the records your seeking. Logical operation commands are outlined in the dBASEII manual.

IV. DISKETTE BACKUP FOR THE OSTEOLOGICAL CATALOG

There are three identical copies of the database and database management system. The Master Copy, or "Working Version" is maintained on a hard disk located within the microcomputer. There are two backup copies of this Master Version stored on color coded (Red and Green) 8" floppy diskettes (two diskettes per copy).

All normal editing routines (adding, changing, or deleting records) are to be done by the primary user on the master copy (hard disk) using the interactive edit program, i.e., OSTEOEDT. After all editing sessions, the databases (OSTEO.DBF, PROSTEO.DBF and KEYVAL.NDX) must be copied from the Master Copy to the Red and Green copies. This is a necessary precaution due to the ever present possibility that the hard disk could crash and erase the Master Copy.

1. MASTER AND BACKUP COPY USE.

A. Master Copy - Maintained on the hard disk. To be used only by the primary user for editing and generating reports.

B. Backup Copies - Each backup copy consists of two 8" floppy diskettes. There are two backup copies; each copy is an identical updated version of the Master Copy and should be

maintained as such.

Due to diskette data storage limitations, we use two diskettes for each backup copy. One diskette holds the "Database Management System" (all command files/programs for the catalog). The other diskette contains the "databases" used in the catalog (so one diskette can be thought of as holding the programs and the other as storing the data).

These backup copies are color coded; there is a red backup copy and a green backup copy. The red copy contains two, 8" floppy diskettes. It should be used only by the primary user. One red diskette is marked for the "Database" (data) backups. The other red coded diskette is marked for the "Database Management System" (program) backup. The green copy, which contains two 8" floppy diskettes, should be used by all secondary users for data viewing and report generation. One red coded diskette is marked for the "Database" backups. The other green coded diskette is marked for the "Database Management System" backup.

IMPORTANT NOTE: At some point in time, as the OSTEO.DBF database increases in record size, the back up diskette may fill up with data records before the complete database has been transferred. At such time another color coded diskette will need to be added to complement the orginal back up database diskette (see Appendix A to format a new floppy diskette).

A program called DISKBACK.CMD allows the splitting up and transfer of OSTEO.DBF onto 2 or more diskettes (see Appendix B, DISKBACK for user instruction).

2. BACKUP COPY PROCEDURE (after edit sessions) - "Database" backup.

Place Red diskette #1 ("Database Copy") in C Drive:

a) **A>DSKRESET** (Disk reset command, acknowledges diskette in C Drive)
b) **A>B:** (Switch from A Drive to B Drive)
c) **B>PIP C:=OSTEO.DBF[V]** (Copies OSTEO.DBF to C Drive containing the Red Copy)
d) **B>PIP C:=PROSTEO.DBF[V]** (Copies PROSTEO.DBF to C Drive containing the Red Copy)
e) **B>PIP C:=KEYVAL.NDX[V]** (Copies KEYVAL.NDX to C Drive containing the Red Copy)

The backup procedure is now complete for the Red Diskette.

After completing the above, remove the Red Diskette from the C Drive and replace it with the Green Diskette #1 (Database Copy). Then repeat steps c through e.

3. BACKUP COPY PROCEDURE (for programming changes). Database Management System backup.

As needs change, you may find it desirable to make changes to the Edit or Report Module programs or to other programs used by the Osteological Catalog. These changes should be done by a computer programmer. It is important that the programmer make the revisions and test them on his/her own floppy disk - not the Master or backup copies.

If it is necessary to first copy the programs to be revised to the programmer's own floppy disk, use the following procedure (assume the program to be changed is called XXX.CMD):

Place the programmer's floppy diskette (containing revised program) in C Drive:

1) **A>DSKRESET** (Disk Reset Command).
2) **A>B:** (Switch from A Drive to B Drive).
3) **B>PIP C:=XXX.CMD[V]** (Copies indicated program from B Drive to C Drive which contains the floppy disk).

After the program is revised and tested, the new version should be read to the Master and backup copies. Use the following procedure:

Place programmer's floppy diskette in C Drive:

1) **A>DSKRESET** (Disk reset Command)
2) **A>C:** (Switch from A Drive to C Drive)
3) **C>PIP B:=XXX.CMD[V]** (Copies indicated program from C Drive to the B Drive 'hard disk')
4) **C>B:** (Switches from C Drive to B Drive)

Place Red Backup diskette #2 (Database Management System) in C Drive:

5) **B>PIP C:=XXX.CMD[V]** (Copies indicated file from hard disk to C Drive with Red backup diskette).

Place Green backup diskette #2 (Database Management System) in C drive and repeat Step 5.

4. BACKING UP ALL THE DATABASE MANAGEMENT PROGRAMS

If at some time it becomes necessary to copy all the database management programs to the backup diskettes, here's a quick way to transfer the programs from hard disk to the red and green diskettes in C drive:

1) B>PIP C:=*.BAK<cr>
   B>PIP C:=*.CMD<cr>
   B>PIP C:=*.DEF<cr>
   B>PIP C:=*.DUP<cr>
   B>PIP C:=*.IO<cr>
   B>PIP C:=*.RLS<cr>
   B>PIP C:=*.RPL<cr>
   B>PIP C:=*.COM<cr>
   B>PIP C:=*.VAL<cr>
   B>PIP C:=*.OLD<cr>
   B>PIP C:=*.FRM<cr>
   B>PIP C:=*.VL1<cr>
   B>PIP C:=*.VL2<cr>

2) Place green diskette in C drive, then repeat the steps above.

E. STORAGE OF BACKUP DISKETTES

Backup diskettes should be stored in dust proof, color-coded cases at the sites recommended below:

Red diskettes - in the primary user's cabinet.
Green diskettes - at the terminal location.

ACKNOWLEDGEMENTS

We extend special thanks to Dr. William F. Perrin for guidance and needed suggestions throughout the development process and thanks to Cliff Ratcliffe for typing the revised manuscript many times.

FERENCE LIST 1. VALID ENTRIES FOR THE 25 VARIABLES OF OSTEO.DBF

riable	Valid Entries	Literal Translation/Comment
ECIMEN	(3 letters, then 4 numbers)	NMFS Specimen Number
RT	CARCASS	Whole Body or Entire Skeleton
art refers to the	HEAD/SK	Head or Skull
ecimen osteological	PC SKEL	Post Cranial Carcass or Post Cranial
rt as well as related		Skeleton
ta items)	FETUS	Fetus
	STOMACH	Stomach and/or Contents
	FLIPPRS	Flippers
	ODD BON	Any Other Skeletal Bone (describe in "Comments'")
	BALEEN	Baleen Sample
	TERMVRT	Terminal Caudal Veterbrae Section
	PARASIT	Parasites
	OTHER	Any other Parts/Data Items
	EXTMS	External Measurements (Body or Head)
	BONEMS	Skeletal Bone Measurements
	XRAY	Xray
	PHOTO	Photograph
TRYDATE	Month/Day/Year (2 digits per entry)	Date of Data Entry
TRANT	(3 Characters)	Initials of Data Entry Person
ATUS	FROZN	Frozen Specimen
F Specimen)	FLENS	Flensed Specimen
	IPREP	Specimen In-Preparation
	PREPD	Prepared Specimen
	SLIDE	Histological or Photographic Slide
	DISC	Specimen Discarded
	HEAD	External Measurements of Head Recorded
	TOTAL	External Total Body Measurements
	SKULL	Skull Measurements Recorded
	PCSKL	Measurements of Post Cranial Carcass or Post Cranial Skeleton Recorded
	PRINT	Photograph Print
	NEGTV	Photograph Negative

REFERENCE LIST 1. VALID ENTRIES FOR THE 25 VARIABLES OF OSTEO.DBF (continued)

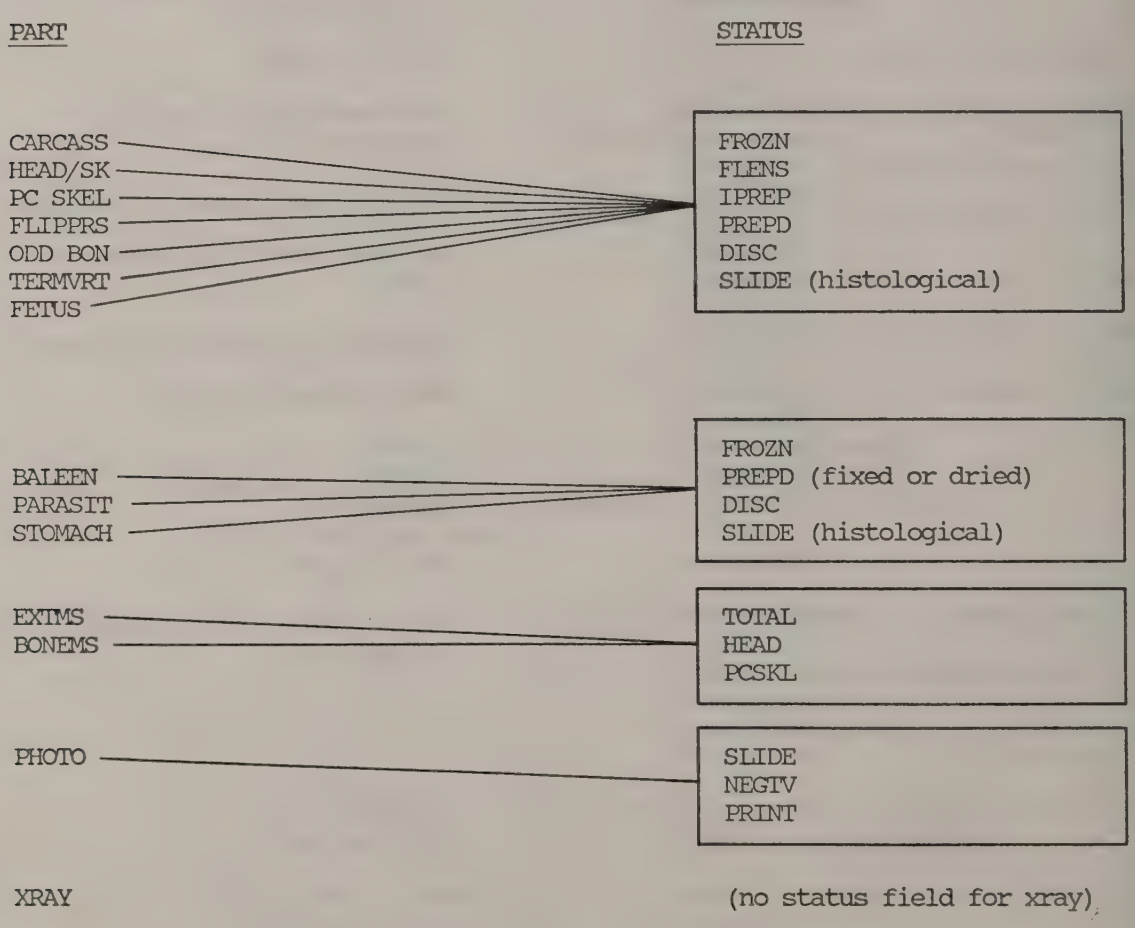
Variable	Valid Entries	Literal Translation/Comment
LOCATION (of Specimen)	GABB	Downtown Freezer Storage
	IABF	SWFC Walk-in Freezer
	SWFC	Marine Mammal Biology Lab
	MUSM	Museum Storage
	UNK	Unknown
	OTHR	Any Other Location (describe in "Comments")
SUBLOCAT (Sublocation)	C#1	Cabinet #1, Marine Mammal Biology Lab, SWFC
	C#2	Cabinet #2, Marine Mammal Biology Lab, SWFC
	C#3	Cabinet #3, Marine Mammal Biology Lab, SWFC
	C#4	Cabinet #4, Marine Mammal Biology Lab, SWFC
	C#5	Cabinet #5, Marine Mammal Biology Lab, SWFC
	C#6	Cabinet #6, Marine Mammal Biology Lab, SWFC
(Sublocation)	BUG	Dermestid Colonly
	BRM	Bone Room, SWFC
	(or any other 3 character location code)	(describe in comments)
DISP (Dispostion of Specimen)	C	Contracted (i.e., museum preparation contract)
	D	Donated to a Museum or other Institution
	L	Loaned to museum or Others
MUSEUM	(See Reference List 2, Acronym List)	Name of Museum or Institution with Specimen in Collection
MUSEUMNUM	Alpha and/or Numeric Characters Acceptable	Museum assigned Specimen Catalog Number
FETSEX (Fetus Sex)	M or F	Male or Female
FETLEN (Fetus Length)	3 Digits	Fetus Length (in millimeters)
MISC (Miscellaneous)	any 4 characters	To describe any Miscellaneous Code
CRUISE	4 Digits	NMFS Cruise Number
SPECIES	(see Species Code, Reference List 3)	5 character abbreviation of Marine Mammal Species

REFERENCE LIST 1. VALID ENTRIES FOR THE 25 VARIABLES OF OSTEO.DBF (continued)

riable	Valid Entries	Literal Translation/Comment
OCK	(see Stock Code, Reference List 3)	Code describing Management Stock (when applicable)
X	M or F	Male or Female
LLDATE ollection Date)	Month/Day/Year (2 digits per entry)	The Date the Specimen was Collected
TITUDE	4 Digits	Degrees and minutes of Latitude
	1=North 2=South	North or South Hemisphere
NGITUDE	5 Digits	Degrees and minutes Longitude
	1=East 2=West	East or West Longitude
NGTH	3 Digits	Length of Specimen (in centimeters)
AG	1 Character	For any code
MENT	25 Characters	For any additional Specimen information

REFERENCE LIST 2. Logical entries for STATUS and PART variables.

The variable fields "PART" and "STATUS" coincide, i.e., their meanings complement each other within the record. There are limitations on the STATUS variables that are to be used with specific PART variables.



REFERENCE LIST 3. Cetacean Species/Stock Codes.

Species	Species Code	Common Name	Stock Code
LAGENODELPHIS HOSEI	L.HOS	FRASER'S DOLPHIN	26
STENELLA ATTENUATA	S.ATT	NORTHERN OFFSHORE SPOTTED DOLPHIN	02N
STENELLA ATTENUATA	S.ATT	SOUTHERN OFFSHORE SPOTTED DOLPHIN	02S
STENELLA ATTENUATA	S.ATT	UNIDENT. OFFSHORE SPOTTED DOLPHIN	02
STENELLA ATTENUATA	S.ATT	COASTAL SPOTTED DOLPHIN	06
STENELLA ATTENUATA	S.ATT	UNIDENT. SPOTTED DOLPHIN	90
STENELLA CLYMENE	S.CLY	CLYMENE DOLPHIN	
STENELLA COERULEOALBA	S.COE	NORTHERN STRIPED DOLPHIN	13N
STENELLA COERULEOALBA	S.COE	SOUTHERN STRIPED DOLPHIN	13S
STENELLA COERULEOALBA	S.COE	UNIDENT. STRIPED DOLPHIN	13
STENELLA LONGIROSTRIS	S.LON	COSTA RICAN SPINNER	88
STENELLA LONGIROSTRIS	S.LON	EASTERN SPINNER DOLPHIN	10
STENELLA LONGIROSTRIS	S.LON	NORTHERN WHITEBELLY SPINNER DOLPHIN	11N
STENELLA LONGIROSTRIS	S.LON	SOUTHERN WHITEBELLY SPINNER DOLPHIN	11S
STENELLA LONGIROSTRIS	S.LON	UNIDENT. WHITEBELLY SPINNER DOLPHIN	11
STENELLA LONGIROSTRIS	S.LON	HAWAIIAN SPINNER DOLPHIN	12
STENELLA LONGIROSTRIS	S.LON	UNIDENT. SPINNER DOLPHIN	03
STENELLA PLAGIODON	S.PLA	ATLANTIC SPOTTED DOLPHIN	91
DELPHINUS DELPHIS	D.DEL	BAJA NERITIC COMMON DOLPHIN	16
DELPHINUS DELPHIS	D.DEL	NORTHERN COMMON DOLPHIN	05N
DELPHINUS DELPHIS	D.DEL	CENTRAL COMMON DOLPHIN	05C
DELPHINUS DELPHIS	D.DEL	SOUTHERN COMMON DOLPHIN	05S
DELPHINUS DELPHIS	D.DEL	GUERRERO COMMON DOLPHIN	05G
DELPHINUS DELPHIS	D.DEL	UNIDENT. COMMON DOLPHIN	05
TURSIOPS TRUNCATUS	T.TRU	BOTTLENOSE DOLPHIN	18
LAGENORHYNCHUS ACUTUS	L.ACU	ATLANTIC WHITE-SIDED DOLPHIN	
LAGENORHYNCHUS ALBIROSTRIS	L.ALB	WHITE-BEAKED DOLPHIN	
LAGENORHYNCHUS AUSTRALIS	L.AUS	PEALE'S DOLPHIN	23
LAGENORHYNCHUS CRUCIGER	L.CRU	HOURGLASS DOLPHIN	
LAGENORHYNCHUS OBLIQUIDENS	L.OBL	PACIFIC WHITE-SIDED DOLPHIN	22
LAGENORHYNCHUS OBSCURUS	L.OBS	DUSKY DOLPHIN	25
LISSODELPHIS BOREALIS	L.BOR	NORTHERN RIGHT WHALE DOLPHIN	27
LISSODELPHIS PERONII	L.PER	SOUTHERN RIGHT WHALE DOLPHIN	
GRAMPUS GRISEUS	G.GRI	RISSO'S DOLPHIN	21
STENO BREDANENSIS	S.BRE	ROUGH-TOOTHED DOLPHIN	15
SOTALIA FLUVIATILIS	S.FLU	TUCUXI	
SOUSA CHINENSIS	S.CHI	INDO-PACIFIC HUMP-BACKED DOLPHIN	
SOUSA TEUSZII	S.TEU	ATLANTIC HUMP-BACKED DOLPHIN	
PEPONOCEPHALA ELECTRA	P.ELE	MELON-HEADED WHALE	31
FERESA ATTENUATA	F.ATT	PYGMY KILLER-WHALE	32
PSEUDORCA CRASSIDENS	P.CRA	FALSE KILLER WHALE	33
ORCINUS ORCA	O.ORC	KILLER WHALE	37
GLOBICEPHALA MACRORHYNCHUS	G.MAC	SHORT-FINNED PILOT WHALE	36
GLOBICEPHALA MELAENA	G.MEL	LONG-FINNED PILOT WHALE	35
CEPHALORHYNCHUS COMMERSONII	C.COM	COMMERSON'S DOLPHIN	
CEPHALORHYNCHUS HEAVISIDII	C.HEA	HEAVISIDE'S DOLPHIN	
CEPHALORHYNCHUS HECTORI	C.HEC	HECTOR'S DOLPHIN	
CEPHALORHYNCHUS EUTROPIA	C.EUT	BLACK DOLPHIN	
PHOCOENA DIOPTRICA	P.DIO	SPECTACLED PORPOISE	
PHOCOENA PHOCOENA	P.PHO	HARBOR PORPOISE	40

REFERENCE LIST 3. (continued)

Species	Species Code	Common Name	Stock Code
PHOCOENA SINUS	P.SIN	COCHITO	41
PHOCOENA SPINIPINNIS	P.SPI	BURMEISTER'S PORPOISE	42
PHOCOENOIDES DALLI	P.DAL	DALL'S PORPOISE	44
NEOPHOCAENA PHOCAENOIDES	N.PHO	FINLESS PORPOISE	
DELPHINAPTERUS LEUCAS	D.LEU	WHITE WHALE OR BELUGA	
ORCAELLA BREVIROSTRIS	O.BRE	IRRAWADDY DOLPHIN	
MONODON MONECEROS	M.MON	NARWHAL	
PLATANISTA GANGETICA	P.GAN	GANGES SUSU	
PLATANISTA MINOR	P.MIN	INDUS SUSU	
INIA GEOFFRENSIS	I.GEO	BOUTU	
LIPOTES VEXILLIFER	L.VEX	BEIJI	
PONTOPORIA BLAINVILLEI	P.BLA	FRANCISCANA	
TASMACETUS SHEPHERDI	T.SHE	TASMAN BEAKED WHALE	64
BERARDIUS ARNUXII	B.ARN	ARNOUX'S BEAKED WHALE	62
BERARDIUS BAIRDII	B.BAI	BAIRD'S BEAKED WHALE	63
MESOPLODON BIDENS	M.BID	SOWERBY'S BEAKED WHALE	
MESOPLODON BOWDOINI	M.BOW	ANDREWS' BEAKED WHALE	
MESOPLODON CARLHUBBSI	M.CAR	HUBBS' BEAKED WHALE	
MESOPLODON DENSIROSTRIS	M.DEN	BLAINEVILLE'S BEAKED WHALE	
MESOPLODON EUROPAEUS	M.EUR	GERVAIS' BEAKED WHALE	
MESOPLODON GINGKODENS	M.GIN	GINGKO-TOOTHED BEAKED WHALE	
MESOPLODON GRAYI	M.GRA	GRAY'S BEAKED WHALE	
MESOPLODON HECTORI	M.HEC	HECTOR'S BEAKED WHALE	
MESOPLODON LAYARDII	M.LAY	STRAP-TOOTHED WHALE	
MESOPLODON MIRUS	M.MIR	TRUE'S BEAKED WHALE	
MESOPLODON PACIFICUS	M.PAC	LONGMAN'S BEAKED WHALE	
MESOPLODON STEJNEGERI	M.STE	STEJNEGER'S BEAKED WHALE	
ZIPHIUS CAVIROSTRIS	Z.CAV	CUVIER'S BEAKED WHALE	61
HYPEROODON AMPULLATUS	H.AMP	NORTHERN BOTTLENOSE WHALE	
HYPEROODON PLANIFRONS	H.PLA	SOUTHERN BOTTLENOSE WHALE	50
KOGIA BREVICEPS	K.BRE	PYGMY SPERM WHALE	47
KOGIA SIMUS	K.SIM	DWARF SPERM WHALE	48
PHYSETER MACROCEPHALUS	P.MAC	SPERM WHALE	46
CAPEREA MARGINATA	C.MAR	PYGMY RIGHT WHALE	68
BALAENA MYSTICETUS	B.MYS	BOWHEAD WHALE	67
EUBALAENA GLACIALIS	E.GLA	NORTHERN RIGHT WHALE	66
EUBALAENA AUSTRALIS	E.AUS	SOUTHERN RIGHT WHALE	65
ESCHRICHTIUS ROBUSTUS	E.ROB	GRAY WHALE	69
BALAENOPTERA ACUTOROSTRATA	B.ACU	MINKE WHALE	71
BALAENOPTERA BOREALIS	B.BOR	SEI WHALE	73
BALAENOPTERA EDENI	B.EDE	BRYDE'S WHALE	72
BALAENOPTERA MUSCULUS	B.MUS	BLUE WHALE	75
BALAENOPTERA PHYSALUS	B.PHY	FIN WHALE	74
MEGAPTERA NOVAEANGLIAE	M.NOV	HUMPBACK WHALE	76

REFERENCE LIST 4. MUSEUM ACRONYMS (other research and educational institutions are included

AMNH	American Museum of Natural History (New York, NY)
BMNH	British Museum (Natural History) (London, England)
CAS	California Academy of Sciences (San Francisco, CA)
CNEMN	Centre National D'Etude des Mammifères Marins (La Rochelle, France)
CNM	Cabrillo National Monument (San Diego, CA)
DMNH	Denver Museum of Natural History (Denver, CO)
FM	Field Museum of Natural History (Chicago, IL)
HIPU	Hirnanatomisches Institut der Psychiatrischen Universitatsklinik (Bern, Switzerland)
HMRI	Hubbs-Marine Research Institute (San Diego, CA)
IFAN	Institut Fondamental d' Afrique Noire
JHMI	Johns Hopkins Medical Institute (Baltimore, MD)
LACM	Los Angeles County Museum of Natural History (Los Angeles, CA)
LSUMNS	Louisiana State University, Museum of Natural Sciences (Baton Rouge)
MCS	Moclips Cetological Society, The Whale Museum (Friday Harbor, WA)
MCZ	Museum of Comparative Zoology (Harvard University, Cambridge, MA)
MLP	Marineland of the Pacific (Palos Verdes Estates, CA)
MMBL	Marine Mammal Biological Laboratory, NMFS, Northwest Fisheries Center Seattle, WA)--see also NMML
MNCH	Museum of Natural and Cultural History (Oklahoma State Univ. Stillwater)
MNHN	Musèum National d'Histoire Naturelle (Paris, France)
MOLR	Musèe Oceanographique, Centre National D'Etude des Mammifères Marins (La Rochelle, France)
MVZ	Museum of Vertebrate Zoology (Univ. of California, Berkeley)
NMML	National Marine Mammal Laboratory, NMFS, Northwest Fisheries Center (Seattle, WA)--see also MMBL
NMNS	National Museum of Natural Sciences (Ottawa, Ontario)
NOSC	Naval Oceans Systems Center (San Diego, CA)
NSM	National Science Museum (Tokyo, Japan)
OBS	Oklahoma Biological Survey (Univ. of Oklahoma at Norman)
RMNH	Rijksmuseum van Natuurlijke Historie (Leiden, Netherlands)
RNP	Redwood National Park (Arcata, CA)
SBMNH	Santa Barbara Museum of Natural History (Santa Barbara, CA)
SDMNH	San Diego Museum of Natural History (San Diego, CA)
SDSU	San Diego State University (CA)
SIO	Scripps Institution of Oceanography (Univ. of California, San Diego)
SLP	Sea Life Park (Hawaii)
SMSH	Storall Museum of Science and History, Univ. of Oklahoma (Norman, OK)
SWFC	Southwest Fisheries Center, NMFS (La Jolla, CA)
SWRB	NMFS, Southwest Regional Branch Office, Tuna/Porpoise Mgmt. Branch (San Diego, CA)
TCWC	Texas Cooperative Wildlife Collection (Texas A&M Univ., College Station)
TKO	University of Tokyo (Japan)
UBC	University of British Columbia (Vancouver, B.C. Canada)
UCMP	University of California Museum of Paleontology (Berkeley, CA)
UCSC	University of California, Santa Cruz
UCSD	University of California, San Diego
UPS	University of Puget Sound (Tacoma, WA)
USNM	National Museum of Natural History-Smithsonian Insitution (Washington, D.C.)
UZMC	Universitets Zoologiske Museum Copenhagen (Denmark)
YPM	Yale Peabody Museum (Yale University, New Haven, CT)
ZMA	Zoological Museum of Amsterdam (Netherlands)
ZMB	Zoological Museum of Berlin (East Germany)
ZMUZ	Zoologisches Museum der Universitat Zurich (Switzerland)
ZSSD	Zoological Society of San Diego (San Diego, CA)

REFERENCE LIST 5. TECHNICAL MANUALS AND BOOKS FOR FURTHER READING

Beyers, R.A. 1982. Everymans Database Primer featuring dBASEII. Ashton-Tate Publ., Culver City, California.

Cortesi, D.E. 1982. Inside CP/M: a guide for users and programmers with CP/M-86 and MP/M2. CBS College Publ., New York.

dBASEII Assembly-Language, Relational Database, Management System version 2.41. Culver City, California: Ashton-Tate.

Freedman, A. 1984. dBASEII for the First Time User. Ashton-Tate Publ., Culver City, California.

Simpson, A. 1984. Understanding dBASEII. Sybex Inc., Berkeley, California.

APPENDIX A.

Floppy Diskette Formatting Program (CCSINIT.COM)

This program initializes new diskettes to the La Jolla Standard (LJS) CP/M system. The LJS in use for the Osteological Catalog is an upgraded model (8 bit) equipped with a hard disk (13MB) and 1 floppy disk drive. The following procedure is adapted for this specific LJS model.

Procedure:

1) Put a new floppy diskette in the drive and then get onto A drive and start the interactive program:

A>CCSINIT<cr>

CCS DISK FORMATTER PROGRAM V2.0

(Important note: When using the LJS model described above, the next user response is always "A"; otherwise you'll erase all data and programs on one side of the hard disk. This program thinks the floppy drive is A.)

	User Response
WHICH DRIVE (A-D)	A
SINGLE OR DOUBLE SIDED (0 OR 1)/?	1
SINGLE OR DOUBLE DENSITY (S/D)?	D
TRACK NUMBER (0-4C OR *)?	*
SECTOR SIZE (0-3)	2
IS IT A MINI (Y/N	N
WHICH DRIVE (A-D)?	<cr>

(when formatting a series of diskettes, put another diskette in the drive, and then enter "A" at the last response above; this program will loop around)

APPENDIX B. DISKBACK Program.

This dBASE II program facilitates the splitting up and transfer of OSTEO.DBF onto two or more backup storage floppy diskettes. This program is necessary when the database becomes too large to store on one floppy diskette.

The new diskettes should be color coded according to backup procedures. If you are using DISKBACK for the first time, see Appendix A for instructions on formatting/initializing a new floppy diskette.

Part 1. Copying the database to sub-files on diskettes procedure.

1) Place original "red" database backup diskette in C drive and back up PROSTEO.DBF and KEYVAL.NDX in the following manner:

```
A>DSKRESET<cr>
A>B:<cr>
B>PIP C:=PROSTEO.DBF [V]<cr>
B>PIP C:=KEYVAL.NDX[V]<cr>
```

2) Next get into dBASEII on B drive, and enter:

```
. DO DISKBACK<cr>
```

3) You'll be prompted with:

```
"HOW MANY RECORDS TO BE BACKED UP ON EACH
DISKETTE  :   :"
```

enter a number that will divide the database as evenly as possible; the indicated number of records will be transferred to the diskette in C drive.

4) Next prompt:

```
"REMOVE DISKETTE AND ENTER NEXT ONE
 READY TO COPY NEXT DISKETTE?
 WHEN READY, FIRST ENTER CONTROL C
 FOLLOWED BY A Y FOR YES"
```

enter "control C" and then enter "Y" when ready and the next group of records will transfer to the "new" diskette.

5) The program will prompt you until all records have been copied.

6) According to backup procedures, you should start at Step 1 above, this time with the orginal "green" database backup copy.

The DISKBACK program will send the indicated number of records to as many diskettes as is necessary to hold the database. Each group of records (on its own diskette) is a sequential sub-group taken from the main database. DISKBACK automatically keeps track of the sequential groups by naming each group differently as it is transferred to its own diskette. For example, the first diskette would receive the indicated number of records and these records are held in the file OSTEO1.BCK, the second diskette would hold the second group of records and they would be filed under OSTEO2.BCK, the third diskette would hold the records under OSTEO3.BCK and so on.

If the hard disk fails and the master copy of OSTEO.DBF is erased you will need to follow the next procedure to append the sequential backup files into the dBASEII database, OSTEO.DBF.

Part 2. Appending the sub-files back into the database OSTEO.DBF.

Procedure:

1) Place the diskette containing PROSTEO.DBF and OSTEO1.BCK in C drive.

2) Get into dBASEII on B drive (dBASEII command files are on manufacturer's diskettes)

3) Enter at prompt:

```
.RESET<cr>  (reset C drive)
.USE C:PROSTEO (PROSTEO has the same
structure as OSTEO)
.COPY  TO  B:OSTEO STRUCTURE (copies
structure to the file OSTEO.DBF on B drive)
.USE OSTEO
.APPEND FROM C:OSTEO1.BCK SDF<cr>
```

(now place the diskette containing OSTEO2.BCK in C drive)

```
.RESET<cr>
.APPEND FROM C: OSTEO2.BCK SDF<cr>
```

Continue the last 2 procedures (commands) until you have appended all the sub-files back to OSTEO.DBF. Remember to switch diskettes and remember that each sub-file is named in numerical sequence: OSTEO1.BCK, OSTE02.BCK, OSTEO3.BCK, etc.

APPENDIX C. Interface System: Life History Databases and Osteological Catalog Database.

This processing system is designed to ensure that specimen data records on the Osteological Catalog are identical to their corresponding specimen record data on the larger life history databases. The life history databases are kept on tape disks at the UCSD VAX computer center.

This interface system compares certain data fields between the two databases; keeps track of specimen parts listed on one of the databases but not listed on the other. It looks for inconsistant data-record values between the two databases and makes note of this. It also will add to the Osteological Catalog those records (from life history) which indicate that an osteological research part has been collected but not previously entered into the catalog. The system will generate a number of report lists and data files whose functions are to either point out data value discrepancies or to (through further processing) automatically update the catalog.

Bear in mind that each specimen part is represented by a separate record on the catalog. A life history database contains only one record per animal. All research parts for that animal are listed on the one life history record.

This system should be run once or twice a year to ensure consistant accurate data between the databases.

A) The first program to be run is LHTRANS.CMD. This is a dBASE II program that uses OSTEO.DBF. It will take selected data from each record and send it to a dBASEII datafile called LHTRANS.DBF (make sure this file is in your directory and is void of records). The file structure for LHTRANS.DBF is:

FLD	NAME	TYPE	WIDTH
001	XSPECIMEN	C	007
002	XPART	C	007
003	XSEX	C	001
004	XSTOCK	C	004

To run the program, get into DBASEII and enter:

DO LHTRANS<cr>

You will be prompted interactively for a response to:

"TYPE IN THE START DATE. SPECIMENS WITH ENTRY DATES ON OR AFTER THIS DATE WILL BE INCLUDED IN THE OUTPUT

: / / " (Month/Day/Year)

This option allows you to exlude those records that were processed by the interface system some time in the past. Check

the log on page 45 of this report to see the most recent date that LHTRANS.CMD was run. You should enter this date as the "start date" at the interactive prompt. Check "programmers note," paragraph number 3 on the next page. A corresponding entry date option is installed in the LHOCINIT.COM file.

LHTRANS.DBF is automatically converted to a system data format (SDF) file named LHTRANS.DAT and entered into the CP/M directory. This conversion will allow the file to be transfered to the UCSD/VAX computer.

B) LHTRANS.DAT needs to be transferred to the VAX for futher processing. The transfer needs to be done via the KERMIT program (consult KERMIT documentation, appendix D).

Once LHTRANS.DAT is transfered and held in your VAX directory, you are ready to start the processing of this file.

C) The program LHTRANS.EXE (on the VAX) will use LHTRANS.DAT and process the file into eleven "OC" files according to specimen sex and species composition. For example, all records of female common dolphins (Delphinus delphis) on LHTRANS.DAT will be written to the file OCFDEL.DAT. Male spotted dolphin (Stenella attenuata) specimen records will be writtento the file OCMSPT.DAT, and so on. Each "OC" file is related to, and will later be compared with one of the eleven life history database files.

To execute the program enter:

```
$ RUN LHTRANS<cr>
```

The 11 "OC" output files will be:

OCFDEL.DAT	OCFSPT.DAT	OCFOTH.DAT
OCMDEL.DAT	OCMSPT.DAT	OCMOTH.DAT
OCFSPN.DAT	OCFSTK.DAT	OCNSEX.DAT
OCMSPN.DAT	OCMSTK.DAT	

These files will have the following structure:

Columns 1-7	Specimen number
Columns 8-14	Part
Column 15	Sex
Columns 16-18	Species code

D) The next processing step requires that all eleven of the life history database files be transferred into your VAX directory. The life history database files are kept on tape storage at the UCSD computer center. Consult the data manager at the SWFC to have the files put on line and transferred to the proper VAX directory.

E) The program LHOCINT compares data of the life history database with those of the Osteological Catalog "OC" files and

vice versa. Eight ouput files are generated by this program.

The following input program files should be on your VAX directory for this section of system:

1) the 11 "OC" files mentioned above
2) the 11 life history database files
3) LHOCINT.EXE
4) LHOCINT.COM
5) LHOCINTLK.COM
6) LHOCINT.FOR

This is a large program, and the most cost efficient mode, in terms of money, for running the program is on "backlog". To do so, enter:

```
$SUBMIT/QUEUE=BACKLOG/CPUTIME=1:30:00 LHOCINT
```

(You may have to adjust the CPUTIME according to the number of records being processed)

Programmer's note: The command file LHOCINIT.COM, controls the executable file (LHOCNIT.EXE). It contains 3 input variables for LHOCINIT.EXE that can be readily edited if a change is called for. The variables in the command file are:

1 on line #1, this command assigns the directory where the programs and data are to be found. If your sub-directory is changed, this line should reflect the change.

2 on line #6, a "Yes" or "No" prompt as to whether you want ouputs for specimen parts found on the life history data records, but not found on the osteological catalog. The prompt is presently set at "Yes".

3 on line #7, a "start date" variable. Life history records with a date equal to or later than this start date will be included in the program processing. This option allows the exclusion (from processing) of those life history records previously processed by this interface system. This option works hand in hand with the Osteological Catalog data record "start date" option, described in Part A of this section. Check the log (last page this section) to find the date of the most recent (chronologically) life history record processed. The "start date" (YYMMDD) variable should be, the date directly after the date listed in the log.

If LHOCINIT.COM is edited, it will be necessary to compile and link the program to create an updated version of

LHOCINT.EXT. The files LHOCINT.FOR and LHOCINTLK.COM are used in this compile process. To compile and link the program enter:

$ SUBMIT LHOCINTLK<cr>

F) As mentioned previously, LHOCINT does the comparative processing between the osteological catalog data and the life history data.

The outputs are generated according to several comparison strategies during the processing. The outputs are explained below.

Output Files

These outputs reflect matched specimen numbers between the life history databases and the Osteological Catalog.

1) OCLHMRGE.DAT this data file contains life history data records for all Osteological Catalog records having a matching (specimen number) record on the life history data base. This data file will be transferred to the Micro and used in a program (LHUPDATE.CMD) that compares data values. The purpose is to ensure accuracy of data in the two data bases.

2) OCLHINFO.LIS this report lists whether or not parasites and/or photos were collected for those specimen records (Osteological Catalog) with a matched record on the life history database. This list can be used as a quick reference to see the status of these data fields on the life history database.

These outputs are generated when Osteological Catalog data is not found on the life history database:

3) OCNOSPEC.LIS this report lists those specimen records on the Osteological Catalog with no matching record found on the life history database.

4) OCNOPART.LIS in some cases, a specimen record is matched between the two databases, but the associated part records (on the Osteological Catalog) will have no match. That is, the matched life history record (with the identical specimen number) does not indicate that all the parts (on the Osteological Catalog) have been collected or accounted for. This report list all those parts (on the Osteological Catalog) which are unrecorded on the life history data records.

These outputs are generated when life history data is not found on the Osteological Catalog data base:

5) LHNOSPEC.LIS this report will list life history database data (specimen number, sex, species, parts) for specimen records with no match on the Osteological Catalog.

6) LHNOSPEC.DAT this datafile contains all the records from the report above (LHNOSPEC.LIS). This data file will be transferred to the Micro and appended to OSTEO.DBF via the dBASEII program LHADDON.CMD

7) LHNOPART.LIS these data records represent cases where a specimen record on the life history database is matched with a specimen record on the Osteological Catalog (specimen numbers are equal), but not all the parts listed as collected on the life history record have a match (data record) on the Osteological Catalog. This report lists those parts not currently included as records on the Osteological Catalog.

8) LHNOPART.DAT. this data file contains the data records found in the report above (LHNOPART.LIS). This file should be transferred to the Micro and appended to OSTEO.DBF via the dBASEII LHADDON.CMD program (same procedure as number 6 above).

A total of five reports and three data files are generated by LHOCINT. The 5 reports can be referenced for making data corrections/edits on the life history database and the osteological database.

G) The three data files mentioned above need to be transferred to the Micro via the KERMIT program (see Appendix D).

The 3 data files to transfer are:

1) OCLHMRGE.DAT
2) LHNOSPEC.DAT
3) LHNOPART.DAT

H) Now that all three data files have been transferred to the Micro CP/M directory and are listed as OCLHMRGE.DAT, LOHNOSPEC.DAT and LHNOPART.DAT, you are ready to append the files into their respective dBASEII database structures.

Be sure the file structures for OCLHMRGE.DBF, LHNOSPEC.DBF and LHNOPART.DBF are on your disk and are void of data before you append the new data.

See Appendix D, KERMIT, parts 4 and 5 to append the (_____.DAT) SDF data files into their respective dBASEII files. That is, OCLHMRGE.DAT should be appended to OLHMRGE.DBF and so on for all 3 files.

I) The dBASEII program LHUPDATE.CMD will be run next. This program uses OCLHMRGE.DBF and compares certain data values (life history) with OSTEO.DBF data values. If one of these data fields is blank (in OSTEO.DBF), this program will fill in that field with the current data value (from the life history database). If there is a discrepancy between the compared data values, a warning message is sent to the printer (be sure it is turned on).

To run the program, get into dBASEII and enter:

.DO LHUPDATE<cr>

The following fields are compared during this program:

FETSEX
FETLEN
SPECIMEN
CRUISE
STOCK
SEX
COLLDATE
LATITUDE
NS
LONGITUDE
EW
LENGTH

After running the program the updated version of OSTEO.DBF should be backed up according to prior procedures.

J) The final program to be run is LHADDON.CMD. This program will add records from LHNOSPEC.DBF and LHNOPART.DBF to OSTEO.DBF. These records will contain only the data from data fields that are identical between life history records and OSTEO.DBF records.

Those data fields are:

SPECIMEN
PART
FETSEX
FETLEN
CRUISE
SPECIES
STOCK
SEX
COLLDATE
LATITUDE
NS
LONGITUDE
EW
LENGTH

To run the program enter:

.DO LHADDON<cr>

The program also checks to make sure that it is not adding a part record that is already on OSTEO.DBF. If it finds such a record, a warning message is sent to the printer.

After the program run in completed, the updated version of OSTEO.DBF should be backed up according to prior procedures.

APPENDIX D. KERMIT: File Transfer Program (with special reference for use of dBASEII files)

This is a procedure that transfers files between computers. Transfer of files between the micro and the VAX (UCSD) computers will be done over the (LAN) telephone line.

1) Sending dBASEII files from the micro to the VAX

All dBASEII files must be converted to a System Data Format (SDF) text file before transfer to the VAX. If you are using the Osteological Catalog/Life History Interface program, LHTRANS.CMD, the conversion will be done automatically (go to step 2 if using this program). The SDF conversion will make the dBASEII file acceptable to the operating system of the VAX. To convert a dBASEII file to a SDF file, get into dBASEII and enter:

.USE FILENAME <cr>
(assuming "FILENAME" is the name of your dBASEII file)

.COPY TO FILENAME.DAT SDF <cr>
(you can rename the file to anything except a ".DBF" file)

The data from FILENAME.DBF is now listed as FILENAME.DAT (an SDF file) and is ready for transfer to the VAX. To get out of dBASEII enter:

.QUIT <cr>

2) Transfer of SDF files from the micro to the VAX

The following command and interactive program sequence will facilitate transfer of SDF files to the VAX using the program KERMIT. The LAN line needs to be hooked up to the modem port on your microcomputer (port 2B on the La Jolla Standard). Turn on the micro and enter:

```
B> KERMIT <cr>
    CUCCA/STEVENS Zenith Z-100 Kermit 80-v3.2

KERMIT-80> C <cr>    (C for connection to the VAX)
  [Connected to remote host, type Control-\C to return]

(hit <cr> twice)

You may now enter Net/One commands.

>> SET ECHO OFF <cr>
>> CONNECT SDCC1 <cr>
            Connecting .....(1)43008 Success.
(hit <cr>)
```

```
USERNAME: NM50 <cr>  (enter your username)
PASSWORD: (enter current password)<cr>

    (a  welcome message from the UCSD computer center will scroll
    by)

$ SET DEF [NM50.BONES] <cr> (enter the name of your VAX directory)
$ RUN KERMIT <cr>

    VWS KERMIT-32 Version 3.1.006

KERMIT-32>  SERVER <cr> (the VAX is assigned as the  servant,  it
                        will  react  to commands  given  by  the
                        micro)

    "Kermit server running on the VAX/VMS host.  Please type your
     escape  sequence to return to your local machine,  shut down
     the  server  by  typing Kermit BYE  command  on  your  local
     machine."

  enter:
          control\C   (this is the escape sequence that takes you
                      back  to the KERMIT program running on  the
                      micro)

     [connection closed, back to the micro]
**
 KERMIT-80> SEND FILENAME.DAT <cr> (tells  the micro to send  the
                                    file to the VAX)

     "Number of Packets:
      Number of Retries:
      File Name: "

          (data  block numbers will run across  the screen,  this
           indicates that data is being transfered)

KERMIT-80> FINISH <cr>
KERMIT-80> C <cr> (connect back to the VAX)
          [connected to remote host, type control\C to return]

  (hit <cr> twice)

$ LO <cr>  (log off of the VAX)

           (VAX  CPU  time and cost summary will  appear  on  the
           screen)

"You may now enter NET/ONE commands."

>> control\C
     [connection closed, back to micro]

KERMIT-80> EXIT <cr>
```

3) Transfer of files from the VAX to the micro

Use the same procedure as #2 above, except instead of entering "SEND FILENAME.TXT" at the double asterisk above, enter:

KERMIT-80> R FILENAME.DAT <cr>
(R represents "recieve")

The data file will be transfered from the VAX via the LAN line. The file will be an SDF file listed in your CP/M directory as" FILENAME.DAT". To review the file (to make sure there were no errors during transfer), enter:

B> TYPE FILENAME.DAT <cr>

4) Considerations for transferring a SDF file back into its original dBASEII file

As you recall, the data in the dBASEII file were copied and converted to a SDF file so the data could be transfered to the VAX for processing. This procedure left the original dBASEII file untouched (i.e., all data records and the file structure are as they were prior to the SDF conversion procedure). The SDF file must now be converted back to a dBASEII file. The dBASEII "APPEND" command will promote the conversion. Since the dBASEII file (i.e., FILENAME.DBF) presently contains all the original data records, and since the "APPEND" command would simply add the SDF file records to the bottom of the dBASEII file, the records presently in the dBASEII file need to be deleted.

CAUTION: If you are using/transferring one of the data files from the Osteological Catalog (OSTEO.DBF, PROSTEO.DBF, or KEYVAL.NDX), be sure to take the following precautionary steps before you delete the data in the file:

a) Ascertain that all records in OSTEO.DAT (or PROSTEO or KEYVAL) are correct.

b) Make certain you have current copies of OSTEO.DBF (and the others) stored on the RED and GREEN backup diskettes.

To delete records in the original dBASEII data file, get into dBASEII and enter:

.USE FILENAME <cr>

.DELETE ALL <cr>

This command will mark all the records in FILENAME.DBF with an asterisk, this indicates they are marked for deletion. You can reverse this process (i.e., the asterisk can be erased and records will not be marked for deletion by giving

the command:

.RECALL ALL <cr>

To actually erase all the records in the dBASEII file enter:

.PACK <cr>

All records marked for deletion are now deleted.

5) Appending a SDF file to a dBASEII file

To transfer the SDF file data into the dBASEII file structure, get into dBASEII and enter:

.USE FILENAME <cr>
.APPEND FROM FILENAME.DAT SDF <cr>

This will copy all the records from FILENAME.DAT and place them into FILENAME.DBF. Once you have accomplished this it is wise to view FILENAME.DBF and make certain the records were correctly copied from the SDF file. It is important that the FILENAME.DBF file be correct since the next step calls for deletion of the SDF file.

To delete FILENAME.DAT, enter:

.QUIT <cr>

B> ERA FILENAME.DAT <cr>
(deletes the file)

6) Transfer of files between microcomputers

This sections explains how to transfer files between two microcomputers. If you are transfering dBASEII files, the files need to be converted to SDF files before transfer. The machines used in this example are the LJS (La Jolla Standard) micro and the KAYPRO 10 micro.

First, connect the modem port (2B) on the LJS to the J4 Serial Data I/O port on the KAYPRO. Next, set the communication port baudrates equal for the two micros. On the LJS, enter:

B> BAUDRATE <cr>

"BAUD RATE SELECTOR FOR CCS 2810 CPU
AND 2710 QUAD SIO BOARDS"

"SELECTION CHANNEL:" (enter:2B)
"(1A, 2A, 2B, 2C, OR 2D)"

SELECT RATE: (enter:O to set the baudrate at 9600)

BAUD RATE SET.

To set the baudrate on the KAYPRO enter:

B> BAUDM <cr>
(select G to set the baudrate at 9600)

The baudrates do not necessarily have to be set at "9600", they do however, have to be equal for both machines.

To transfer the files using the KERMIT program.

On the KAYPRO enter:

B> KERMIT <cr>
"CUCCA/STEVENS Zenith Z-100 KERMIT 80-v3.2"

KERMIT-80>r *.*<cr>
("R" for receive)
"Number of packets
Number of retries:
File name: *.*"

(the KAYPRO will now wait to receive the file from the LJS micro. When the file has been sucessfully received, the KERMIT-80> prompt will return to the screen)

On the LJS enter:

A> KERMIT<cr>

CUCCA/STEVENS Zenith Z-100 Kermit-80-V3.2

KERMIT-80> SEND FILENAME.DAT <cr>

"Number of packets:
Number of retries:
File Name:"

(the KERMIT-80> prompt will return when the micro is finished with sending the file)

enter "E" to return to the CP/M system.

This process can be reversed to transfer files from the KAYPRO to the LJS.

Figure 1. EDIT SYSTEM

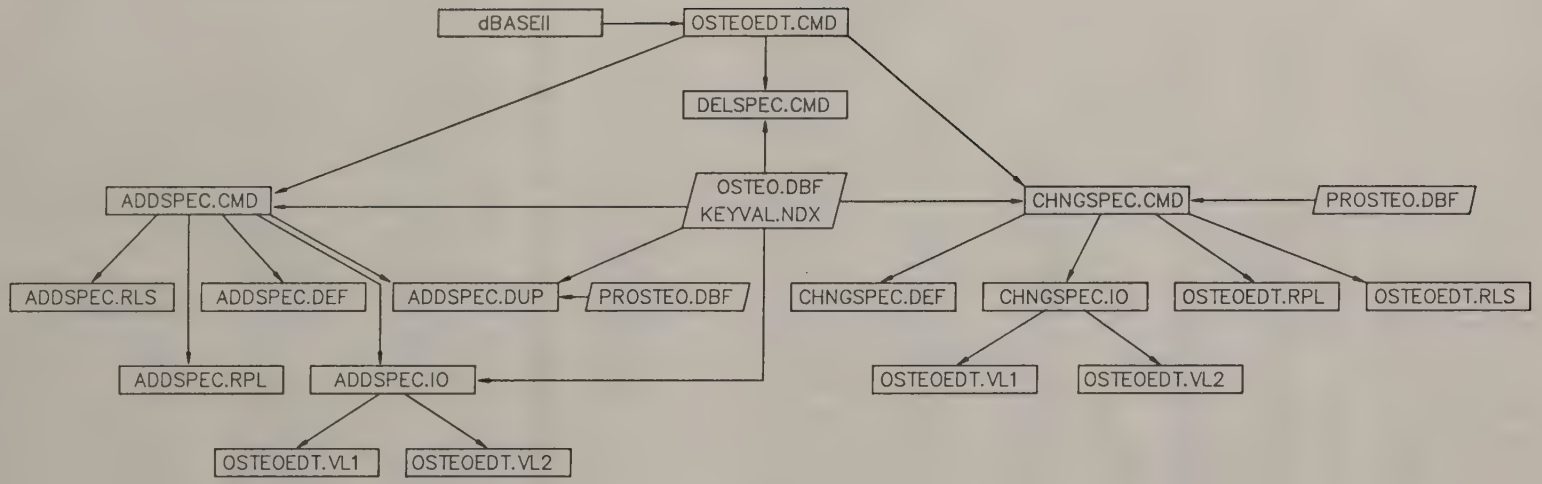


Figure 2. REPORT SYSTEM

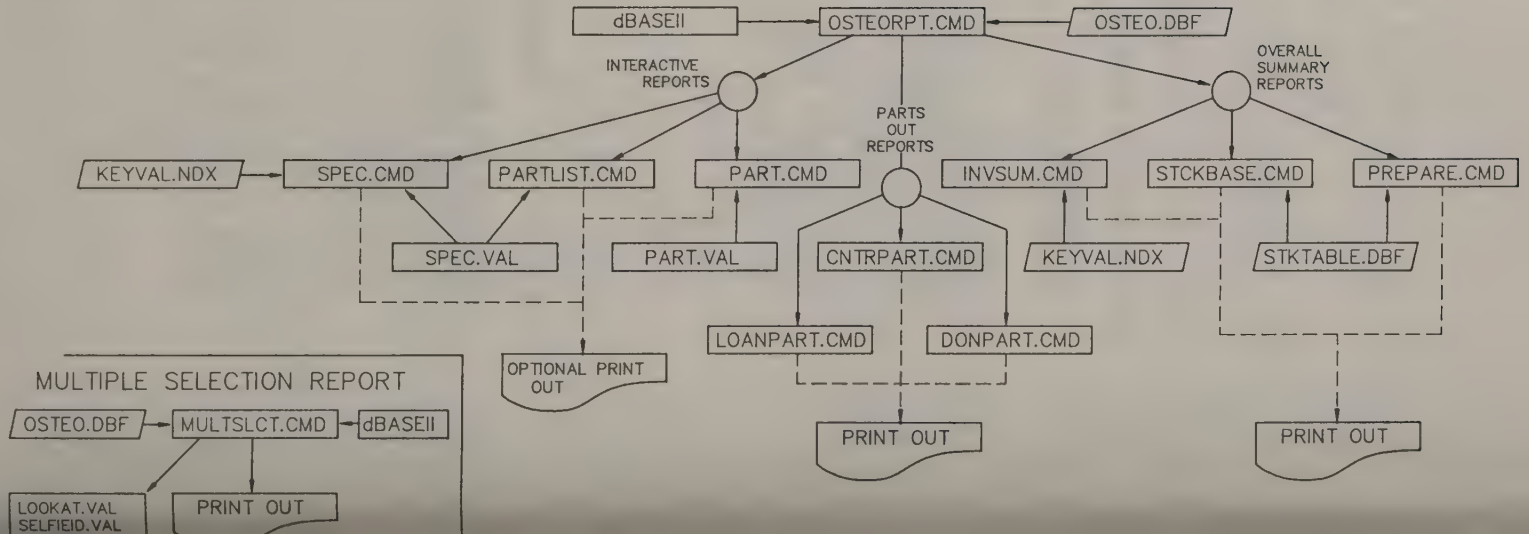


Figure 3. OSTEOLOGICAL CATALOG/LIFE HISTORY DATABASE INTERFACE SYSTEM

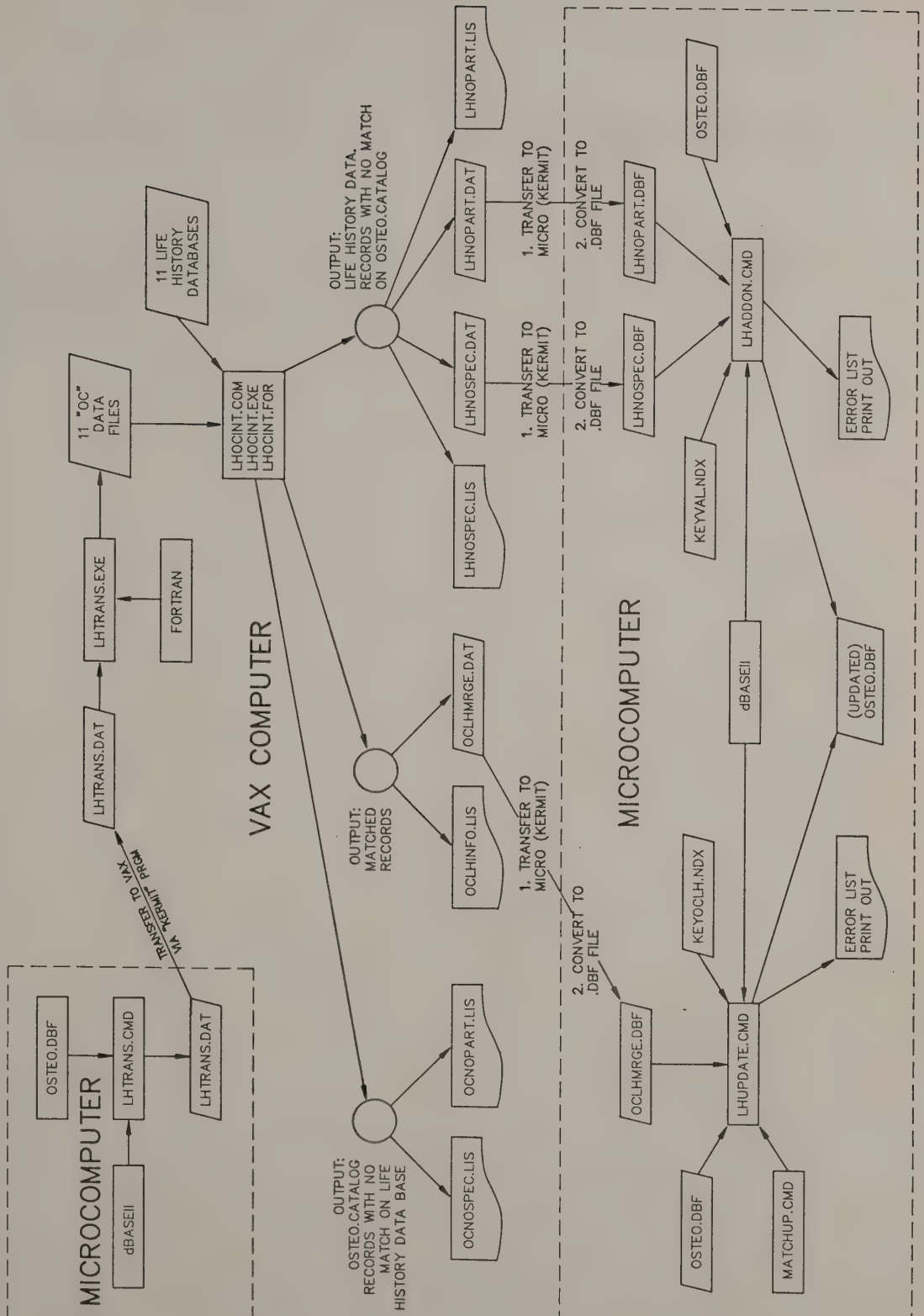


FIGURE 4

LOG PAGE: INTERFACE SYSTEM - LIFE HISTORY/OSTEOLOGICAL CATALOG DATABASE

DATE OF L.H./OSTEO. INTERFACE PROGRAMMING	LAST NMFS CRUISE # ENTERED IN L.H.DATA-BASE AND PROCESSED TO DATE	LAST NMFS CRUISE # ENTERED IN OSTEO. CATALOG AND PRO-CESSED TO DATE